AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [01] with the following amended paragraph:

[01] This application is related to, and claims benefit of and priority from, Provisional Application No. **60/501,784** filed on September 9, 2003 (Attorney Docket No. 133741UL (1772-15113US01), titled "Method and Apparatus for Tissue Harmonic Imaging with Natural (Tissue) Decoded Coded Excitation", the complete subject matter of which is incorporated herein by reference in its entirety.

Please replace paragraph [19] with the following amended paragraph:

[19] One or[[e]] more embodiments of the methods described previously may further comprise filtering using a filter which passes at least one selected frequency and blocks one or more other frequencies. It is contemplated that such filtering may occur prior to or after the coherent summation. One or more other embodiments comprise decoding the at least one coherent sum of the backscattered echoes, wherein such decoding occurs naturally through propagation of the one or more coded pulses and one or more phase inverted versions of the coded pulses inside tissue and the coherent summation of one or more backscattered echoes of the coded pulses and the one or more backscattered echoes of the phase inverted versions of the coded pulses. Still other embodiments may comprise selecting a center frequency of the at least one pulse such that a second

harmonic signal is generated having a center frequency falling within a predetermined bandwidth range of a probe.

Please replace paragraph [39] with the following amended paragraph:

[39] A coherent summation module or device 26 is illustrated coupled to and communicating with at least vector memory 24. The module or device 26 is adapted to coherently sum**[[ming]]** at least one backscattered echo of a pulse with at least one backscattered echo of a phase inverted version of the pulse as provided below. The coherent summation module 26 is illustrated coupled to and communicating with a filtering module or device 28 (a bandpass filter for example). In one or more embodiments of the present invention, the filtering module 28 filters at least the coherent summation of backscattered echo of the pulse and backscattered echo of the phase inverted version of the pulse using one or more filters, which pass selected frequencies and stop other frequencies. It is understandable that the module 26 and module 28 may be switched in position such that the filtering for each backscattered echo may happen before the coherent summation depending on the implementation. It is also contemplated that filtering module 28 does not use a matched decoding/decompressing filters to accomplish such filtering. It is further contemplated that filtering module 28 may use a mismatched filter for improved range side lobe levels.

Please replace paragraph [41] with the following amended paragraph:

[41] At least one embodiment of the present invention comprises a central controller or control processor 50, which may comprise the main, central processor of the ultrasound machine 10, interfacing to various other components of the ultrasound machine 10. Central controller 50 executes the various data algorithms and functions for the various imaging and diagnostic modes. Digital data and commands may be communicated between central controller 50 and one or more of the components of the ultrasound machine 10. As an alternative, the functions performed by central controller 50 may be performed by multiple processors or a combination thereof. As a further alternative, the functions of central controller_50_may be integrated into a single PC backend.

Please replace paragraph [44] with the following amended paragraph:

[44] At least one embodiment of the present invention uses a transmitted waveform design. In at least one embodiment, the transmitted waveform design comprises a time bandwidth product greater than 1, typically, with fractional bandwidth (alternatively referred to as "BW") greater than about 80%. In this embodiment, the waveform may be amplitude and frequency modulated. Amplitude modulation may be applied in the form of a window function, such as Gaussian shading for example. Frequency modulation may be linear (as in a chirp for example) or non-linear. The center frequency of the pulse

is selected in a way that the generated second harmonic signal will have a center frequency falling within the –12dB bandwidth range of the probe. Embodiments of the present invent**ion** use frequency modulated coded excitation pulses in combination with pulse inversion, where the waveforms have a time bandwidth product greater than about 1, and a bandwidth greater than about 80%. It is also contemplated that the bandwidth of the waveforms may not have to be greater than 80% depending on the real application issue.

Please replace paragraph [46] with the following amended paragraph:

[46] Step 220 comprises receiving at least one of a backscattered echo of the coded pulse (along the same beam path for example). Step 230 comprise transmitting at least one phase inverted version of the coded pulse (along the same beam path for example). Step 240 comprises receiving at least one backscattered echo of the phase inverted version of the coded pulse (along the same beam path for example). In at least one embodiment, method 200 further comprises Step 250, which comprises coherently summing at least one of the backscattered echoes of the coded pulse with at least one of the backscattered echoes of the phase inverted version of the coded pulse forming at least one coherent sum. In at least one embodiment, it is contemplated that the coherent sum**[[med]]** **of** at least one backscattered echo of the coded pulse and at least one of the backscattered echo of the phase inverted version of the coded pulse are filtered (using a

bandpass filter for example). In another embodiment, it is contemplated that the at least one of the backscattered echo of the coded pulse and the backscattered echo of the phase inverted version of the coded pulse are filtered prior to being coherently summed. In at least one embodiment, at least the coded pulse comprises at least one of a frequency linear modulated pulse and frequency non-linear modulated pulse. Further, the coded pulse may be amplitude modulated or frequency modulated. It is further contemplated that a center frequency of the at least one pulse is selected such that a second harmonic signal is generated having a center frequency falling within a predetermined bandwidth range of a probe.

Please replace paragraph [52] with the following amended paragraph:

[52] In at least one embodiment, method 400 comprises Step 450 comprising coherently summing the at least one backscattered echo beam of the coded pulse with the at least one backscattered echo of the phase inverted version of the coded pulse, forming a received echo beam along a third beam path. In one embodiment, the third beam path is in spaced relationship to both the first and second beam paths (in the middle of the neighboring first and second beam paths for example). It is contemplated that, in at least one embodiment, the received echo bea**[[n]]**<u>**m**</u> is filtered (using a bandpass filter for example). In another embodiment, the at least one backscattered echo beam of the coded pulse and the at least one backscattered echo of the phase inverted version of the coded

pulse are filtered prior to being coherently summed. In at least one embodiment, method 400 further comprises at least the coded pulse is a frequency linear modulated pulse and frequency non-linear modulated pulse and may be an amplitude modulated or a frequency modulated pulse.